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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/739,496	12/18/2000	Shlomo Reches	13498.9US01	9446

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EXAMINER	
SEFCHECK, GREGORY B	
ART UNIT	**PAPER NUMBER**
2662	

DATE MAILED: 07/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/739,496	RECHES, SHLOMO	
	Examiner	Art Unit	
	Gregory B Sefcheck	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-37 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-37 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 18 December 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites the limitation "the END signal" in the first line of claim 14. There is insufficient antecedent basis for this limitation in the claim.

Examiner's Note: This lack of antecedent basis would be remedied if claim 14 depended from claim 13 instead of claim 11.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-6, 9-11, 13, 15-27, and 29-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Bauman et al. (US006160812A), hereafter Bauman.

- In regards to claims 1, 2, 9, 11, 13, 15, 16, 18-20, 22, 24, 25, 27, 30, 31, 33, 35, and 36,

Bauman discloses a multiport switch and method for controlling the scheduling variable-length packet requests for port connection through the switch (Abstract; Col. 2-3, lines 65-12; Col. 7, lines 49; claim 1/11/18/22/35 – method of connecting ports/scheduler for forwarding variable length packets across a multiport switch; claim 27/33 – multiport configurable switch for connecting plurality of input ports and output ports).

Bauman shows input processing units generates requests for data forwarding. These requests are checked by the scheduler, with requests selected only if they do not target channels selected that conflict with channels targeted by requests that are already supplied to the scheduler (Abstract; Col 2-3, lines 65-12; claim 1/11/18/22/35 – checking for requests at each time slot to forward packets from source to destination, ignoring requests pertaining to source and destination ports previously scheduled for forwarding packets during a next time slot; claim 1/11/22/35 – selecting/processing selected requests out of the checked requests; claim 27/33 – request generator coupled to input for detecting/receiving packets, determining associated output and generating connection requests; claim 9/16/20/25/31/36 – selecting comprises converging on a conflict free match in multiple iterations)

Referring to Fig. 8, Bauman discloses a scheduler that controls the transfer of data between ports of the switch based upon the selection and granting of requests (Fig. 8; Col. 10, lines 1-25; claim 18 – selecting a granted request for each destination

port associated with a checked request; claim 18 – selecting an accepted request for each source port associated with a granted request; claim 1/11/18/22/35 – configuring/controlling/updating the switch for servicing the selected requests during the next time slot; claim 27/33 – switching scheduler coupled to request generator that carries out scheduling of claim 1 method).

Bauman shows that a DONE_CHN signal indicates to the scheduler when the input channel has completed transmitting the current group of cells (Fig. 7; Col. 9, lines 18-27; claim 33 – input ports track a provision of the packet to detect that transmission ends during a current time slot and sends an END signal; claim 2 – tracking the forwarding of each packet to determine whether forwarding ends during the current time slot; claim 13/30 – receiving an END signal at scheduler from request generator indicative that a forwarding is scheduled to end during the current time slot; claim 15/19/24 – maintaining a connection between source and destination throughout the forwarding).

- In regards to Claim 3,

Bauman discloses a multiport switch and method for controlling the scheduling variable-length packet requests for port connection through the switch that covers all limitations of the parent claims.

Bauman shows that the scheduler notifies that input port that a request has been granted for a channel N through an IGRANT_CHN signal (Fig. 7; Col. 8, lines 64-66; claim 3 – notifying source ports that issued selected requests about the selection).

- In regards to Claims 4-6, 10, 17, 21, 23, 26, 29, 32, 34, and 37,

Bauman discloses a multiport switch and method for controlling the scheduling variable-length packet requests for port connection through the switch that covers all limitations of the parent claims.

Referring to Fig. 7, Bauman shows that packets are received by the IPP module of the source port and stored into one of a plurality of priority queues (Col. 3, lines 6-30; claim 4 – checking is preceded by receiving packets at the source port and storing the packets at a queue of the source port, where the request reflects at least a portion of the content of the queue; claim 5 – maintaining a queue for each level of priority of each source port and storing a packet according to the priority of the packet).

Bauman shows that the priority assigned to the input queues may be based on the output port (Fig. 3), packet priority (Col. 8, lines 33-44), number of output ports, in the case of a multicast packet (Col. 9, lines 60-67; Col. 12, lines 28-40) or type of data (Col. 8, line 36). The scheduler manages the selection of data from the queues based on priority arbitration (Col. 4, lines 48-50; claim 6 – maintaining a queue for each destination port and storing a packet according to the destination port of the packet; claim 23/29 – maintaining a plurality of queues for differentiating between packets

according to at least one of packet priority, output port, number of output ports, or type; claim 34 – maintaining a plurality of queues with queue manager that receives and determines where to store packets and generates a length indication of the packets; claim 10/17/21/26/32/37 – selecting/processing is based upon a rotating priority arbitration scheme).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman in view of Aoki et al. (US006757255), hereafter Aoki.

- In regards to Claims 7 and 8,

Bauman discloses a multiport switch and method for controlling the scheduling variable-length packet requests for port connection through the switch that covers all limitations of the parent claims.

Bauman discloses sending a signal when transmission of a variable length packet has been completed. Bauman does not explicitly show periodically tracking the forwarding of packets utilitzing an updated length indication of the packet.

Aoki discloses an apparatus and method for measuring communication performance of variable length packets. Aoki shows that transmission parameters such as maximum transmission segment size, transmission round trip time and packet size are obtained from a session database by the performance index detecting unit such that performance characteristics for a particular session can be measured (Fig. 2, 3, 7, 10, 12; Col. 6-7, lines 25-25; claim 7 – periodically tracking the forwarding of packets to determine when the forwarding ends; claim 8 – tracking comprises receiving a length indication indicative of a length of a packet and updating the length indication during the forwarding to reflect a remaining time period until forwarding ends).

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the method and switch of Bauman by utilizing the length of a packet to track the transmission of the packet through monitoring communication parameters of the transmission session, as taught by Aoki, thereby enabling the length of the packet being transmitted to be updated for predicting when the transmission of the packet will be complete and the transmission channel can be utilized by another port.

7. Claims 12 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman.

- In regards to Claims 12, and 28,

Bauman discloses a multiport switch and method for controlling the scheduling variable-length packet requests for port connection through the switch that covers all limitations of the parent claims.

Referring to Fig. 8, Bauman shows a resource management unit that maintains the status of the input and output vectors such that, when a request is granted, the channels related to the request are marked as busy until the packet transfer is completed (Col. 13, lines 9-18).

Bauman does not explicitly state that the status of the switch is maintained over the current and next time slots. However, because the switch is transferring variable length packets that may encompass multiple switching cells, status of the switch over at least the current and next time slots would need to be maintained (claim 12/28 – maintaining a status database of the switch connectivity during at least the current and next time slots).

It would have been obvious to one of ordinary skill in the art at the time of the invention to maintain the switch status for at least the current and next time slots so the complete time needed to transfer a variable-length packet could be monitored.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman in view of Shiobara (US006088363A).

- In regards to Claim 14,

Bauman discloses a multiport switch and method for controlling the scheduling variable-length packet requests for port connection through the switch that covers all limitations of the parent claims.

Bauman shows that a DONE_CHN signal is sent from the input to the scheduler to indicate completion of a packet transfer. Bauman does not show the DONE signal as encoded in the connection request.

Shiobara discloses a transmission control method for scheduling data transfer requests based on transfer completion times. Shiobara shows that the transfers are scheduled based on the packet length information contained in the transfer requests (Title; Abstract; claim 14 – END signal is encoded in the connection requests).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Bauman by encoding an indication of when a data transfer will be complete into the transfer request, as shown by Shiobara. Such a modification would enable efficient scheduling of future transfers over currently allocated channels.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Dooley et al. (US 20030202531A1) discloses a polling response selection using request monitoring in a network switch apparatus
- Ramamurthy et al. (US006618379B1) discloses RRGS-round-robin greedy scheduling for input/output terabit switches
- Honig et al. (US006487171B1) discloses a crossbar switching matrix with broadcast buffering
- Calvignac et al. (US006370148B1) discloses data communications
- Calvignac et al. (US006195335B1) discloses a data switch
- Ogimoto et al. (US006032205A) discloses a crossbar switch system for always transferring normal messages and selectively transferring broadcast messages from input buffer to output buffer when it has sufficient space respectively
- Liang (US005933427A) discloses a switch system employing a N:M switch circuit for routing packets among devices in a data communications network

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory B Sefcheck whose telephone number is 703-305-0633. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703-305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GBS
7-15-2004

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